Complete Summary

GUIDELINE TITLE

Screening for breast cancer: recommendations and rationale.

BIBLIOGRAPHIC SOURCE(S)

U.S. Preventive Services Task Force. Screening for breast cancer: recommendations and rationale. Ann Intern Med 2002 Sep 3;137(5 Part 1):344-6. [10 references] PubMed

GUIDELINE STATUS

This is the current release of the guideline.

This release updates a previously published guideline: U.S. Preventive Services Task Force. Screening for breast cancer. In: Guide to clinical preventive services. 2nd ed. Baltimore (MD): Williams & Wilkins; 1996.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Breast cancer

GUIDELINE CATEGORY

Screening

CLINICAL SPECIALTY

Family Practice
Internal Medicine

Obstetrics and Gynecology
Oncology
Preventive Medicine
Radiology

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Health Care Providers
Nurses
Physician Assistants
Physicians
Students

GUIDELINE OBJECTIVE(S)

- To summarize the current U.S. Preventive Services Task Force (USPSTF) recommendations on screening for breast cancer and the supporting scientific evidence
- To update the 1996 recommendations contained in the Guide to Clinical Preventive Services, Second Edition

TARGET POPULATION

Women aged 40 years and older

INTERVENTIONS AND PRACTICES CONSIDERED

1. Mammography
2. Clinical breast examination
3. Breast self-examination

MAJOR OUTCOMES CONSIDERED

- Sensitivity, specificity, and positive predictive values of screening methods
- Morbidity and mortality due to breast cancer

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The authors identified relevant publications by searching MEDLINE for papers published from 1994 to September 2001, by examining reference lists of review

articles, and by searching the Cochrane Controlled Trials Registry. The searches combined the MeSH term "mammography" with terms for breast cancer, screening, and controlled trials or prospective studies.

To identify articles published before 1994, the authors used reference lists of recent scientific articles and of several previous reviews and meta-analyses. The authors reviewed titles and abstracts of 563 articles and found 8 randomized controlled trials and 1 non-randomized trial conducted between 1963 and 1994 that provide almost all of the pertinent information about the effect of mammography on breast cancer mortality.

NUMBER OF SOURCE DOCUMENTS

8 randomized controlled trials of mammography (4 of mammography alone and 4 of mammography plus clinical breast examination) and 1 non-randomized trial of mammography

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

The U.S. Preventive Services Task Force (USPSTF) grades the quality of the overall evidence on a 3-point scale (good, fair, or poor).

Good

Evidence includes consistent results from well-designed, well-conducted studies in representative populations that directly assess effects on health outcomes.

Fair

Evidence is sufficient to determine effects on health outcomes, but the strength of the evidence is limited by the number, quality, or consistency of the individual studies; generalizability to routine practice; or indirect nature of evidence on health outcomes.

Poor

Evidence is insufficient to assess the effects on health outcomes because of limited number or power of studies, important flaws in their design or conduct, gaps in the chain of evidence, or lack of information on important health outcomes.

Note: See the companion document titled "Current Methods of the U.S. Preventive Services Task Force: a Review of the Process" (Am J Prev Med 2001 Apr;20[3S]:21-35) for a more detailed description of the methods used to assess the quality and strength of the evidence for the three strata at which the evidence was reviewed.

METHODS USED TO ANALYZE THE EVIDENCE

Meta-Analysis of Randomized Controlled Trials
Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Note from the National Guideline Clearinghouse (NGC): A systematic evidence review was prepared by the Oregon Health Sciences University, Evidence-based Practice Center (EPC) for the Agency for Healthcare Research and Quality (AHRQ) for use by the U.S. Preventive Services Task Force (USPSTF) (see the "Companion Documents" field).

Using a Bayesian data analytic framework to fit a random effects model, a meta-analysis was conducted for the USPSTF in which the logarithm of relative risk (logRR) was the measure of effect. Homogeneity of the studies was tested using a test for equal effect sizes. WinBUGS software was used to estimate the parameters of the model. Noninformative prior probability distributions were used. Inference was made on 5,000 simulate draws (1,000 draws from 5 chains) from the posterior distribution after adequate convergence. The results of the meta-analysis and the absolute risks from the randomized controlled trials were used to determine the "number needed to screen" (NNS) to prevent one death from breast cancer. However, since relative risks in the trials are based on intention-to-treat analyses, and most trials were community-based studies where the intervention was an invitation to mammography, the number needed to screen should be interpreted as the "number needed to invite for screening to prevent one breast cancer death" in a specified period of time.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Balance Sheets
Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

When the overall quality of the evidence is judged to be good or fair, the U.S. Preventive Services Task Force (USPSTF) proceeds to consider the magnitude of net benefit to be expected from implementation of the preventive service. Determining net benefit requires assessing both the magnitude of benefits and the magnitude of harms and weighing the two.

The USPSTF classifies benefits, harms, and net benefits on a 4-point scale: "substantial," "moderate," "small," and "zero/negative."

"Outcomes tables" (similar to 'balance sheets') are the USPSTF's standard resource for estimating the magnitude of benefit. These tables, prepared by the topic teams for use at USPSTF meetings, compare the condition specific outcomes expected for a hypothetical primary care population with and without use of the preventive service. These comparisons may be extended to consider only people

of specified age or risk groups or other aspects of implementation. Thus, outcomes tables allow the USPSTF to examine directly how the preventive services affects benefits for various groups.

When evidence on harms is available, the topic teams assess its quality in a manner like that for benefits and include adverse events in the outcomes tables. When few harms data are available, the USPSTF does not assume that harms are small or nonexistent. It recognizes a responsibility to consider which harms are likely and judge their potential frequency and the severity that might ensue from implementing the service. It uses whatever evidence exists to construct a general confidence interval on the 4-point scale (e.g., substantial, moderate, small, and zero/negative).

Value judgments are involved in using the information in an outcomes table to rate either benefits or harms on the USPSTF's 4-point scale. Value judgments are also needed to weigh benefits against harms to arrive a rating of net benefit.

In making its determinations of net benefit, the USPSTF strives to consider what it believes are the general values of most people. It does this with greater confidence for certain outcomes (e.g., death) about which there is little disagreement about undesirability, but it recognizes that the degree of risk people are willing to accept to avert other outcomes (e.g., cataracts) can vary considerably. When the USPSTF perceives that preferences among individuals vary greatly, and that these variations are sufficient to make trade-off of benefits and harms a 'close-call', then it will often assign a C recommendation (see the "Recommendation Rating Scheme" field). This recommendation indicates the decision is likely to be sensitive to individual patient preferences.

The USPSTF uses its assessment of the evidence and magnitude of net benefit to make recommendations. The general principles the USPSTF follows in making recommendations are outlined in Table 5 of the companion document cited below. The USPSTF liaisons on the topic team compose the first drafts of the recommendations and rationale statements, which the full panel then reviews and edits. Recommendations are based on formal voting procedures that include explicit rules for determining the views of the majority.

From: Harris RP, Helfand M, Woolf SH, Lohr KN, Mulrow, CD, Teutsch SM, Atkins D. Current methods of the U.S. Preventive Services Task Force: a review of the process. Methods Work Group, Third U.S. Preventive Services Task Force. Am J Prev Med 2001 Apr;20(3S):21-35.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

The U.S. Preventive Services Task Force (USPSTF) grades its recommendations according to one of five classifications (A, B, C, D, or I), reflecting the strength of evidence and magnitude of net benefit (benefits minus harms).

A

The U.S. Preventive Services Task Force (USPSTF) strongly recommends that clinicians provide [the service] to eligible patients. (The USPSTF found good

evidence that [the service] improves important health outcomes and concludes that benefits substantially outweigh harms.)

B

The U.S. Preventive Services Task Force (USPSTF) recommends that clinicians provide [the service] to eligible patients. (The USPSTF found at least fair evidence that [the service] improves health outcomes and concludes that benefits outweigh harms.)

C

The U.S. Preventive Services Task Force (USPSTF) makes no recommendation for or against routine provision of [the service]. (The USPSTF found at least fair evidence that [the service] can improve health outcomes but concludes that the balance of benefits and harms it too close to justify a general recommendation.)

D

The U.S. Preventive Services Task Force (USPSTF) recommends against routinely providing [the service] to asymptomatic patients. (The USPSTF found at least fair evidence that [the service] is ineffective or that harms outweigh benefits.)

I

The U.S. Preventive Services Task Force (USPSTF) concludes that the evidence is insufficient to recommend for or against routinely providing [the service]. (Evidence that [the service] is effective is lacking, of poor quality, or conflicting and the balance of benefits and harms cannot be determined.)

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Comparison with Guidelines from Other Groups
External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Peer Review: Before the U.S. Preventive Services Task Force (USPSTF) makes its final determinations about recommendations on a given preventive service, the Evidence-based Practice Center and the Agency for Healthcare Research and Quality send a draft systematic evidence review to 4 to 6 external experts and to federal agencies and professional and disease-based health organizations with interests in the topic. They ask the experts to examine the review critically for accuracy and completeness and to respond to a series of specific questions about the document. After assembling these external review comments and

documenting the proposed response to key comments, the topic team presents this information to the Task Force in memo form. In this way, the Task Force can consider these external comments and a final version of the systematic review before it votes on its recommendations about the service. Draft recommendations are then circulated for comment from reviewers representing professional societies, voluntary organizations and Federal agencies. These comments are discussed before the whole U.S. Preventive Services Task Force before final recommendations are confirmed.

Recommendations of Others: Recommendations regarding breast cancer screening from the following groups were discussed: the American Medical Association, the American College of Radiology, the American Cancer Society, the American College of Obstetricians and Gynecologists, the American Academy of Preventive Medicine, the American College of Preventive Medicine, the Canadian Task Force on Preventive Health Care, the American Academy of Family Physicians, and a 1997 Consensus Development Panel convened by the National Institutes of Health.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Note from the National Guideline Clearinghouse and the U.S. Preventive Services Task Force: These recommendations were first released in February, 2002. Subsequent to their release, a 2002 publication provided additional data on outcomes and methods of four mammography trials conducted in Sweden. The additional followup data have been incorporated into the numeric estimates of effectiveness of mammography (see the "Potential Benefit" field), which differ minimally from those cited in the February 2002 release. Overall ratings of study quality were not affected. The recommendations remain unchanged.

The U.S. Preventive Services Task Force grades its recommendations (A, B, C, D, or I) and the quality of the overall evidence for a service (good, fair, poor). The definitions of these grades can be found at the end of the "Major Recommendations" field.

- The U.S. Preventive Services Task Force recommends screening mammography, with or without clinical breast examination, every 1-2 years for women aged 40 and older. B recommendation

The U.S. Preventive Services Task Force found fair evidence that mammography screening every 12-33 months significantly reduces mortality from breast cancer. Evidence is strongest for women aged 50-69, the age group generally included in screening trials. For women aged 40-49, the evidence that screening mammography reduces mortality from breast cancer is weaker, and the absolute benefit of mammography is smaller, than it is for older women. Most, but not all, studies indicate a mortality benefit for women undergoing mammography at ages 40-49, but the delay in observed benefit in women younger than 50 makes it difficult to determine the incremental benefit of beginning screening at age 40 rather than at age 50. The absolute benefit is smaller because the incidence of breast cancer is lower among women in their 40s than it is among older women.

The U.S. Preventive Services Task Force concluded that the evidence is also generalizable to women aged 70 and older (who face a higher absolute risk of breast cancer) if their life expectancy is not compromised by comorbid disease. The absolute probability of benefits of regular mammography increase along a continuum with age, whereas the likelihood of harms from screening (false-positive results and unnecessary anxiety, biopsies, and cost) diminish from ages 40-70.

The balance of benefits and potential harms, therefore, grows more favorable as women age. The precise age at which the potential benefits of mammography justify the possible harms is a subjective choice. The U.S. Preventive Services Task Force did not find sufficient evidence to specify the optimal screening interval for women aged 40-49 (see the Clinical Considerations section below).

- The U.S. Preventive Services Task Force concludes that the evidence is insufficient to recommend for or against routine clinical breast examination (CBE) alone to screen for breast cancer. I recommendation

No screening trial has examined the benefits of clinical breast examination alone (without accompanying mammography) compared to no screening, and design characteristics limit the generalizability of studies that have examined clinical breast examination. The U.S. Preventive Services Task Force could not determine the benefits of clinical breast examination alone or the incremental benefit of adding clinical breast examination to mammography. The U.S. Preventive Services Task Force therefore could not determine whether potential benefits of routine clinical breast examination outweigh the potential harms.

- The U.S. Preventive Services Task Force concludes that the evidence is insufficient to recommend for or against teaching or performing routine breast self-examination (BSE). I recommendation

The U.S. Preventive Services Task Force found poor evidence to determine whether breast self-examination reduces breast cancer mortality. The U.S. Preventive Services Task Force found fair evidence that breast self-examination is associated with an increased risk of false-positive results and biopsies. Due to design limitations of published and ongoing studies of breast self-examination, the U.S. Preventive Services Task Force could not determine the balance of benefits and potential harms of breast self-examination.

Clinical Considerations

- The precise age at which the benefits from screening mammography justify the potential harms is a subjective judgment and should take into account patient preferences. Clinicians should inform women about the potential benefits (reduced chance of dying from breast cancer), potential harms (e.g., false-positive results, unnecessary biopsies), and limitations of the test that apply to women their age. Clinicians should tell women that the balance of benefits and potential harms of mammography improves with increasing age for women between the ages of 40 and 70.
- Women who are at increased risk for breast cancer (e.g., those with a family history of breast cancer in a mother or sister, a previous breast biopsy revealing atypical hyperplasia, or first childbirth after age 30) are more likely

to benefit from regular mammography than women at lower risk. The recommendation for women to begin routine screening in their 40s is strengthened by a family history of breast cancer having been diagnosed before menopause.

- The U.S. Preventive Services Task Force did not examine whether women should be screened for genetic mutations (e.g., BRCA1 and BRCA2) that increase the risk of developing breast cancer, or whether women with genetic mutations might benefit from earlier or more frequent screening for breast cancer.
- In the trials that demonstrated the effectiveness of mammography in lowering breast cancer mortality, screening was performed every 12-33 months. For women aged 50 and older, there is little evidence to suggest that annual mammography is more effective than mammography done every other year. For women aged 40-49, available trials also have not reported a clear advantage of annual mammography over biennial mammography. Nevertheless, some experts recommend annual mammography based on the lower sensitivity of the test and on evidence that tumors grow more rapidly in this age group.
- The precise age at which to discontinue screening mammography is uncertain. Only two randomized controlled trials enrolled women older than 69, and no trials enrolled women older than 74. Older women face a higher probability of developing and dying from breast cancer but also have a greater chance of dying from other causes. Women with comorbid conditions that limit their life expectancy are unlikely to benefit from screening.
- Clinicians should refer patients to mammography screening centers with proper accreditation and quality assurance standards to ensure accurate imaging and radiographic interpretation. Clinicians should adopt office systems to ensure timely and adequate follow-up of abnormal results. A listing of accredited facilities is available at the U.S. Food and Drug Administration (FDA) Web site
- Clinicians who advise women to perform breast self-examination or who perform routine clinical breast examination to screen for breast cancer should understand that there is currently insufficient evidence to determine whether these practices affect breast cancer mortality, and that they are likely to increase the incidence of clinical assessments and biopsies.

Definitions:

The U.S. Preventive Services Task Force (USPSTF) grades its recommendations according to one of five classifications (A, B, C, D, or I), reflecting the strength of evidence and magnitude of net benefit (benefits minus harms).

A

The U.S. Preventive Services Task Force (USPSTF) strongly recommends that clinicians provide [the service] to eligible patients. (The USPSTF found good evidence that [the service] improves important health outcomes and concludes that benefits substantially outweigh harms.)

B

The U.S. Preventive Services Task Force (USPSTF) recommends that clinicians provide [the service] to eligible patients. (The USPSTF found at least fair evidence that [the service] improves health outcomes and concludes that benefits outweigh harms.)

C

The U.S. Preventive Services Task Force (USPSTF) makes no recommendation for or against routine provision of [the service]. (The US Preventive Services Task Force found at least fair evidence that [the service] can improve health outcomes but concludes that the balance of benefits and harms it too close to justify a general recommendation.)

D

The U.S. Preventive Services Task Force (USPSTF) recommends against routinely providing [the service] to asymptomatic patients. (The USPSTF found at least fair evidence that [the service] is ineffective or that harms outweigh benefits.)

I

The U.S. Preventive Services Task Force (USPSTF) concludes that the evidence is insufficient to recommend for or against routinely providing [the service]. (Evidence that [the service] is effective is lacking, of poor quality, or conflicting and the balance of benefits and harms cannot be determined.)

The U.S. Preventive Services Task Force (USPSTF) grades the quality of the overall evidence for a service on a 3-point scale (good, fair, or poor).

Good

Evidence includes consistent results from well-designed, well-conducted studies in representative populations that directly assess effects on health outcomes.

Fair

Evidence is sufficient to determine effects on health outcomes, but the strength of the evidence is limited by the number, quality, or consistency of the individual studies; generalizability to routine practice; or indirect nature of evidence on health outcomes.

Poor

Evidence is insufficient to assess the effects on health outcomes because of limited number or power of studies, important flaws in their design or conduct, gaps in the chain of evidence, or lack of information on important health outcomes.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of evidence supporting each recommendation is identified in the "Major Recommendations" field.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Effectiveness of Early Detection

Mammography

The U.S. Preventive Services Task Force (USPSTF) reviewed 8 randomized controlled trials (RCTs) of mammography (4 of mammography alone and 4 of mammography plus clinical breast examination) that have reported results with 11-20 years of follow-up. The U.S. Preventive Services Task Force found important methodological limitations in each trial, but rated only one trial as "poor" based on established criteria used by the U.S. Preventive Services Task Force to evaluate the quality of evidence for screening tests. The most serious problems concerned the assembly and maintenance of comparable groups, methods for ascertaining outcomes, and generalizability to routine practice. The U.S. Preventive Services Task Force concluded that the flaws were problematic but unlikely to negate the reasonably consistent and significant mortality reductions observed in these trials.

Imperfections in these mammography trials have been recognized and discussed in the literature and by the original investigators for many years. Recently, a 2001 Cochrane Collaboration review of the same trials concluded that six of the eight trials were "flawed" or of "poor quality" and that the pooled results from the remaining two better trials did not support a benefit from mammography. Although the U.S. Preventive Services Task Force was concerned about many (but not all) of the flaws identified in this review, it did not consider the presence of flaws sufficient reason in itself for rejecting trial results. Instead, it examined whether observed mortality reductions in the trials were likely to be explained by the biases potentially introduced by such flaws. Studies rated to be of "fair" quality by the U.S. Preventive Services Task Force contained flaws that were considered unlikely to account for observed benefits (or lack of benefits).

The trials reported mortality reductions ranging from no significant effect to a 32 percent reduction in breast cancer mortality. The meta-analysis performed for the U.S. Preventive Services Task Force on the most current published data found that the pooled effect size of the combined trials was sizable and statistically significant. After excluding data from one trial rated as poor quality by the U.S. Preventive Services Task Force, the summary relative risk (RR) of breast cancer death among women of all ages randomized to screening in the remaining seven trials was 0.84 (95 percent confidence interval [CI], 0.77 - 0.91).

Earlier subgroup analyses from mammography trials raised questions about whether screening is effective in women younger than 50. Seven trials enrolled women aged 40-49. Six of these were rated by the U.S. Preventive Services Task Force to be of at least "fair" quality, but only one of these was designed to specifically address the benefits of screening in this age group: it reported no reduction in breast cancer mortality with annual mammography and clinical breast examination. Of the remaining five fair-quality trials that included women younger than 50, one trial has reported significant mortality reduction with screening in this age group, three have reported non-significant mortality reductions, and one found no benefit. In a meta-analysis performed for the U.S. Preventive Services Task Force pooling results for women aged 40-49 in the six fair-quality trials, the summary relative risk of breast cancer mortality was 0.85 (95 percent CI 0.73-0.99) among screened women after 13 years of observation. These results are similar to prior meta-analyses based on older data.

Because these data represent a subgroup analysis of trials not designed to test the benefits of beginning screening at a specific age, questions remain about the additional benefits of beginning screening before age 50. On average, the time until mortality benefits begin to be observed in these trials is longer in women younger than 50 than in older women (8 years versus 4 to 6 years) and some of the observed benefits could be due to screening after age 50. Analyses of individual studies suggest that at least some of the mortality reduction is due to early detection of tumors before age 50, but definitive estimates of the proportion of benefits due to early screening cannot be made.

Clinical Breast Examination

No study has compared clinical breast examination to no screening. The reductions in breast cancer mortality in studies using mammography alone are comparable to those using mammography plus clinical breast examination.

Breast Self-examination

The role of breast self-examination in reducing breast cancer mortality has been evaluated in one Chinese and one Russian randomized controlled trial and one non-randomized controlled trial of breast self-examination education in the United Kingdom. None of the three trials has demonstrated a reduction in breast cancer mortality or significant improvements in the number or stage of cancers detected, with follow-up ranging from 5 to 14 years; follow-up is continuing in one trial that observed a slight non-significant reduction in mortality in the breast self-examination group at 9 years. In a good-quality nested case-control analysis from a Canadian screening study, the overall practice of breast self-examination was not associated with a reduction in mortality.

Although none of these studies provides support for breast self-examination, the U.S. Preventive Services Task Force concluded that these studies did not exclude a possible benefit, due to their limited duration of follow-up and questions about whether results from other countries are generalizable to women in North America.

Subgroups Most Likely to Benefit:

Mammography

Women who are at increased risk for breast cancer (e.g., those with a family history of breast cancer in a mother or sister, a previous breast biopsy revealing atypical hyperplasia, or first childbirth after age 30) are more likely to benefit from regular mammography than women at lower risk. The recommendation for women to begin routine screening in their 40s is strengthened by a family history of breast cancer having been diagnosed before menopause.

POTENTIAL HARMS

Potential Harms of Screening

Similar to other cancer screening tests, the large majority (80% to 90%) of abnormal screening mammograms or clinical breast examinations are false-positives. These may require follow-up testing or invasive procedures such as breast biopsy to resolve the diagnosis, and can result in anxiety, inconvenience, discomfort, and additional medical expenses. In one large community study, 6.5% of screening mammograms required some additional follow-up and, over a 10-year period, 23% of all women had experienced at least one abnormal mammogram. The cumulative risk of a false-positive result after 10 mammograms was estimated to be 49%. The proportion of false-positive results that lead to biopsy varies substantially in different settings. In screening trials, 1% to 6% of all women screened underwent biopsy, and the proportion of biopsies that revealed cancer ranged from 12% to 78%. In two randomized controlled trials, breast self-examination education resulted in a nearly two-fold increase in false-positive results, physician visits, and biopsies for benign disease.

The consequences of false-positive mammograms are uncertain. Most, but not all, studies report increased anxiety from an abnormal mammogram. At the same time, some studies report that women in the United States may be willing to accept a relatively high number of false-positive results in the population in return for the benefits of mammography. Studies do not indicate that false-positive results diminish adherence to subsequent screening.

False-negatives also occur with mammograms and clinical breast examination. Although false-negative results might provide false reassurance, the U.S. Preventive Services Task Force (USPSTF) found no data indicating these led to further delays in diagnosis.

Some experts view the over-diagnosis and treatment of ductal carcinoma in situ (DCIS) as a potential adverse consequence of mammography. Although the natural history of ductal carcinoma in situ is variable, many women in the United States are treated aggressively with mastectomy or lumpectomy and radiation. Given the dramatic increase in the incidence of ductal carcinoma in situ in the past two decades (750 percent) and autopsy series suggesting that there is a significant pool of ductal carcinoma in situ among women who die of other causes, screening may be increasing the number of women undergoing treatment for lesions that might not pose a threat to their health.

A final potential concern about mammography is radiation-induced breast cancer, but there are few data to directly assess this risk. A 1997 review, using risk

estimates provided by the Biological Effects of Ionizing Radiation report of the National Academy of Sciences, estimated that annual mammography of 100,000 women for 10 consecutive years beginning at age 40 would result in up to 8 radiation-induced breast cancer deaths.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

The U.S. Preventive Services Task Force did not review evidence regarding genetic screening, surveillance of women with prior breast cancer, or formal evaluation of new screening modalities that have not been studied in the general population.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

The experiences of the first and second U.S. Preventive Services Task Force (USPSTF), as well as that of other evidence-based guideline efforts, have highlighted the importance of identifying effective ways to implement clinical recommendations. Practice guidelines are relatively weak tools for changing clinical practice when used in isolation. To effect change, guidelines must be coupled with strategies to improve their acceptance and feasibility. Such strategies include enlisting the support of local opinion leaders, using reminder systems for clinicians and patients, adopting standing orders, and audit and feedback of information to clinicians about their compliance with recommended practice.

In the case of preventive services guidelines, implementation needs to go beyond traditional dissemination and promotion efforts to recognize the added patient and clinician barriers that affect preventive care. These include clinicians' ambivalence about whether preventive medicine is part of their job, the psychological and practical challenges that patients face in changing behaviors, lack of access to health care or of insurance coverage for preventive services for some patients, competing pressures within the context of shorter office visits, and the lack of organized systems in most practices to ensure the delivery of recommended preventive care.

Neither the resources nor the composition of the U.S. Preventive Services Task Force equip it to address these numerous implementation challenges, but a number of related efforts seek to increase the impact of future U.S. Preventive Services Task Force reports. The U.S. Preventive Services Task Force convened representatives from the various audiences for the Guide ("Put Prevention Into Practice. A Step-by-Step Guide to Delivering Clinical Preventive Services: A Systems Approach") - clinicians, consumers and policy makers from health plans, national organizations and Congressional staff - about how to modify the content and format of its products to address their needs. With funding from the Robert Wood Johnson Foundation, the U.S. Preventive Services Task Force and Community Guide effort have conducted an audience analysis to further explore implementation needs. The Put Prevention into Practice initiative at the Agency for

Healthcare Research and Quality (AHRQ) has developed office tools such as patient booklets, posters, and handheld patient mini-records, and a new implementation guide for state health departments.

Dissemination strategies have changed dramatically in this age of electronic information. While recognizing the continuing value of journals and other print formats for dissemination, the Agency for Healthcare Research and Quality will make all U.S. Preventive Services Task Force products available through its Web site. The combination of electronic access and extensive material in the public domain should make it easier for a broad audience of users to access U.S. Preventive Services Task Force (USPSTF) materials and adapt them for their local needs. Online access to U.S. Preventive Services Task Force (USPSTF) products also opens up new possibilities for the appearance of the third edition of the Guide to Clinical Preventive Services. Freed from having to serve as primary repository for all of U.S. Preventive Services Task Force work, the next Guide may be much slimmer than the almost 1000 pages of the second edition.

To be successful, approaches for implementing prevention have to be tailored to the local level and deal with the specific barriers at a given site, typically requiring the redesign of systems of care. Such a systems approach to prevention has had notable success in established staff-model health maintenance organizations, by addressing organization of care, emphasizing a philosophy of prevention, and altering the training and incentives for clinicians. Staff-model plans also benefit from integrated information systems that can track the use of needed services and generate automatic reminders aimed at patients and clinicians, some of the most consistently successful interventions. Information systems remain a major challenge for individual clinicians' offices, however, as well as for looser affiliations of practices in network-model managed care and independent practice associations, where data on patient visits, referrals and test results are not always centralized.

IMPLEMENTATION TOOLS

Foreign Language Translations
Patient Resources
Personal Digital Assistant (PDA) Downloads

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

RELATED QUALITY TOOLS

- Pocket Guide to Good Health for Adults

- A Step-by-Step Guide to Delivering Clinical Preventive Services: A Systems Approach

- The Cost-Effectiveness of Screening Mammography Beyond Age 65: A Systematic Review for the U.S. Preventive Services Task Force

- Screening for Breast Cancer. What's New from the USPSTF.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

U.S. Preventive Services Task Force. Screening for breast cancer: recommendations and rationale. Ann Intern Med 2002 Sep 3;137(5 Part 1):344-6. [10 references] PubMed

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1996 (revised 2002 Sep)

GUIDELINE DEVELOPER(S)

United States Preventive Services Task Force - Independent Expert Panel

GUIDELINE DEVELOPER COMMENT

The U.S. Preventive Services Task Force (USPSTF) is a Federally-appointed panel of independent experts. Conclusions of the USPSTF do not necessarily reflect policy of the U.S. Department of Health and Human Services (DHHS) or DHHS agencies.

SOURCE(S) OF FUNDING

United States Government

GUIDELINE COMMITTEE

U.S. Preventive Services Task Force (USPSTF)

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

The U.S. Preventive Services Task force has an explicit policy concerning conflict of interest. All members and evidence-based practice center (EPC) staff disclose at each meeting if they have an important financial conflict for each topic being discussed. Task Force members and EPC staff with conflicts can participate in discussions about evidence, but members abstain from voting on recommendations about the topic in question.

From: Harris RP, Helfand M, Woolf SH, Lohr KN, Mulrow, CD, Teutsch SM, Atkins D. Current methods of the U.S. Preventive Services Task Force: a review of the process. Methods Work Group, Third U.S. Preventive Services Task Force. Am J Prev Med 2001 Apr;20(3S):21-35.

GUIDELINE STATUS

This is the current release of the guideline.

This release updates a previously published guideline: U.S. Preventive Services Task Force. Screening for breast cancer. In: Guide to clinical preventive services. 2nd ed. Baltimore (MD): Williams & Wilkins; 1996.

GUIDELINE AVAILABILITY

Electronic copies: Available from the U.S. Preventive Services Task Force (USPSTF) Web site. Also available from Annals of Internal Medicine Online and the National Library of Medicine's Health Services/Technology Assessment Text (HSTAT) Web site.

Print copies: Available from the Agency for Healthcare Research and Quality (AHRQ) Publications Clearinghouse. For more information, go to http://www.ahrq.gov/news/pubsix.htm or call 1-800-358-9295. (Outside the United States: 1-410-381-3150;Toll-free TDD service; hearing impaired only: 888-586-6340.)

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

Evidence Review:

- Humphrey LL, Chan BKS, Detlefsen S, Helfand M. Screening for breast cancer: systematic evidence review. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ), 2002 Sep.

  Electronic copies: Available from the United States Preventive Services Task Force (USPSTF) Web site.

- Humphrey LL, Helfand M, Chan BKS. Breast cancer screening with mammography. A summary of the evidence for the U.S. Preventive Services Task Force. Ann Intern Med 2002 Sep 3;137(5):347-67.

  Electronic copies: Available from the USPSTF Web site and Annals of Internal Medicine Online.

Background Articles:

- Woolf SH, Atkins D. The evolving role of prevention in health care: contributions of the U.S. Preventive Services Task Force. Am J Prev Med 2001 Apr;20(3S):13-20.
- Harris RP, Helfand M, Woolf SH, Lohr KN, Mulrow, CD, Teutsch SM, Atkins D. Current methods of the U.S. Preventive Services Task Force: a review of the process. Methods Work Group, Third U.S. Preventive Services Task Force. Am J Prev Med 2001 Apr;20(3S):21-35.
- Saha S, Hoerger TJ, Pignone MP, Teutsch SM, Helfand M, Mandelblatt. The art and science of incorporating cost effectiveness into evidence-based recommendations for clinical preventive services. Cost Work Group of the Third U.S. Preventive Services Task Force. Am J Prev Med 2001 Apr;20(3S):36-43.

Electronic copies: Available from the USPSTF Web site.

Additional Implementation Tools:

- A step-by-step guide to delivering clinical preventive services: a systems approach. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ), 2001. 189 p. (Pub. No. APPIP01-0001). Electronic copies available from the AHRQ Web site.

  Print copies: Available from the Agency for Healthcare Research and Quality Publications Clearinghouse. For more information, go to http://www.ahrq.gov/news/pubsix.htm or call 1-800-358-9295 (U.S. only).

- The Preventive Services Selector, an application for Palm Pilots and other PDA's, is also available from the AHRQ Web site.
- Screening for breast cancer. What's new from the third USPSTF. Rockville (MD): Agency for Healthcare Research and Quality; 2002 Feb. Electronic copies: Available from USPSTF Web site.

The Preventive Services Selector, an application for Palm Pilots and other PDA's, is also available from the AHRQ Web site.

PATIENT RESOURCES

The following is available:

- What you need to know about mammograms and breast cancer. Fact sheet. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ), 2002 Feb. 1 p. (Pub. No. APPIP02-0014).

  Electronic copies available from the Agency for Healthcare Research and Quality (AHRQ) Web site.

- The Pocket Guide to Good Health for Adults. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2003.

  Electronic copies: Available from the U.S. Preventive Services Task Force (USPSTF) Web site. Copies also available in Spanish from the USPSTF Web site.

Print copies: Available from the Agency for Healthcare Research and Quality Publications Clearinghouse: 1-800-358-9295. (Outside the United States: 1-410-381-3150;Toll-free TDD service; hearing impaired only: 888-586-6340.)

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC STATUS

This summary was completed by ECRI on June 30, 1998. The information was verified by the guideline developer on December 1, 1998. The summary was updated on March 6, 2002. The updated information was verified by the guideline developer as of March 8, 2002. This summary was updated again on September 4, 2002.

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